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VOTER PREFERENCES FOR TRADE POLICY INSTRUMENTS

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ABSTRACT

We analyze voter preferences for tariffs and production subsidies. The distribution of tax revenues argument shows that voters with high direct tax burdens prefer tariffs to subsidies. The uncertainty argument demonstrates that if actual tariff and subsidy rates are chosen from the set of individually optimal rates then the range of tariff rates is smaller than the range of subsidy rates. Thus, tariffs might be preferred even though they are less efficient. Finally, the large country argument shows that if a country is large then voters whose income shares decline with more protection prefer tariffs to subsidies.

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I. INTRODUCTION

When redistribution of income through commercial policies is considered, which instrument is preferred by voters? This question is of particular interest in an open economy when the choice is between tariffs and production subsidies.[1] Concerning the voters' preferences between these instruments, Mayer and Riezman (1987) have shown that production subsidies dominate tariffs, if peoples' policy preferences are based on differences in factor ownership.[2] Domination means that every person is better off with a production subsidy than a tariff of the same value, independent of the rate of protection. Consequently, one would expect that neither individual voters nor policy platforms of politicians call for tariffs. Empirical evidence, however, reveals that voters, lobbying groups, and politicians frequently favor tariffs over production subsidies, with the primary objective of redistributing income.

A variety of arguments have been suggested to reconcile theory and practice. Most frequently mentioned is the *transparency argument.*[3] It states that governments prefer tariffs to subsidies because the welfare-reducing effects of tariff intervention are less transparent to individuals. People are less informed about the cost of a tariff, through a loss in consumer surplus, than about the cost of the subsidy, which requires higher taxes to finance it.

Feenstra and Lewis (1990) also focus on incomplete information in explaining the choice of tariffs. However, it is not the people who are less informed than the government, but the government has incomplete information about the losses of individuals from import competition. A nonlinear tariff

becomes the optimal instrument to protect them.

An alternative asymmetry assumption is introduced by Rodrik (1986) in developing what may be called the *public goods argument.* Tariffs, which affect a wider grouping of firms, are more of a public good than subsidies, which tend to be more firm specific. Consequently, the free rider problem is more serious in the case of tariffs and interest groups tend to underpursue them. The public, in turn, wants to minimize injury from trade intervention and pushes politicians into precommitting to the less damaging tariff regime.

Wilson (1990) questions the conclusion of Rodrik's public goods argument and suggests that a given politician should prefer subsidies to tariffs since the former generate higher political contributions. However, he goes on to show that in a political game of several politicians they still may prefer tariffs since the game for subsidies leads to excessive protection.

Staiger and Tabellini (1987) specify a model with fully immobile capital and partially immobile labor in which a terms of trade shock occurs. These adjustment difficulties prevent the government from precommitting to free trade, and tariffs rather than subsidies are likely to be adopted.

Finally, there is a *political process argument*, suggested by Nelson (1987) and elaborated by Mayer and Riezman (1989). It postulates that people differ with respect to more than one feature, in which case multidimensional policy preferences emerge. Even if a tariff is not the ideal point for any person, the social choice process still may yield tariffs as the adopted instrument.

This paper introduces three additional arguments to question the domination of tariffs by production subsidies at the level of voter preferences. The arguments emphasize that the Mayer-Riezman (1987) model, where voters differ with respect to factor ownership only, represents just one

polar case. When tax collection and revenue redistribution systems are no longer unbiased, when voters are uncertain about which rates of protection will eventually be adopted, and when the choice is restricted to either tariff or subsidy in case of a large country, subsidies no longer dominate.[4] In each of the three situations at least some individuals consider tariffs superior to production subsidies as an instrument for redistributing income. Given these preferences of voters with respect to policy instruments, this also opens the possibility that society as a whole will choose tariffs rather than subsidies as a regime for protection.

First, we discuss the *distribution of tax revenues argument.* It rests on the assumption that many income tax systems, on which production subsidies draw and to which tariff revenues contribute, are progressive. When a person's tax share is higher than his or her income share, tariffs reduce the individual's direct tax burden while subsidies raise it. There exists an asymmetry with respect to cost, as the cost of a subsidy is borne by a small group of upper-income people while the cost of the tariff, in terms of lost consumer surplus, is spread across the whole population.

Second, there is the *uncertainty argument.* It deals with situations where people must express their preferences for a policy regime, such as tariffs or subsidies, before they know which rates will actually be adopted. It is shown that the potential range of rates is narrower for tariffs than subsidies, under the assumption that actual rates are chosen from the set of individually optimal rates. This implies that individuals consider a tariff regime to be less efficient, but also less risky than a production subsidy regime, and the less risky tariff regime may be preferred.

Finally, there is the *large country argument.* As was indicated in Mayer and Riezman (1987), when a country has control over the terms of trade, each

person likes a combination of tariffs and subsidies. All people want the same tariff rate to exploit the country's monopoly position, but individually optimal subsidy rates differ depending on factor ownership. Here, we deal with the more realistic situation that people have to choose between either tariffs or subsidies, excluding the possibility of a combination of the two. It is shown that all people whose income shares decline with more protection of the import industry prefer tariffs to subsidies. Even gainers from the protective measures may be better off with the tariff.

II. REAL INCOME UNDER TARIFFS AND SUBSIDIES

The economy under consideration is assumed to consist of I risk-neutral individuals who possess homothetic, identical preferences, but differ from each other with respect to their fixed factor endowments. These differences in factor ownership are the underlying cause for peoples' differences in policy preferences. There are two factors of production which are employed by two competitive industries producing commodities X_1 and X_2. Unless stated otherwise, the economy under consideration is small.

For the risk-neutral ith person, welfare is measured by real income,

$$R^i = y_d^i/e^i(p), \tag{1}$$

where y_d^i is disposable income of individual i, p is the domestic price of the second in terms of the first commodity as faced by consumers, and $e^i = e$ is a price index which, under identically homothetic preferences, is the same for all consumers. We also note that $-\partial R^i/\partial p = R^i e_p/e = (\partial R^i/\partial y_d^i)D_2^i = D_2^i/e$, where

D_2^i is the *i*th consumer's demand for the second commodity.

The second commodity, whose world price is π, is imported. Under a production subsidy, domestic consumers face this world price. Under a tariff, on the other hand, the price becomes:

$$p = \pi(1 + t), \tag{2}$$

where *t* is an ad valorem tariff rate on the import good. Disposable income of the *i*th person, y_d^i, is income received from factor ownership, y^i, adjusted for redistributed tariff revenues received, τ^i, or taxes paid to finance the subsidy, σ^i:

$$y_{dt}^i = y_t^i + \tau^i \quad \text{and} \quad y_{ds}^i = y_s^i - \sigma^i, \tag{3}$$

where subscripts *t* and *s* refer to the tariff and subsidy regimes respectively.

It is convenient to define the *i*th person's share of total factor income by $\phi^i = y^i/Y$ and the shares of total tariff revenues received by $\psi_t^i = \tau^i/T$ and of subsidies financed by $\psi_s^i = \sigma^i/S$. In these expressions, $Y = (X_1 + pX_2)$ is national income produced (total factor income earned), X_j denotes industry output of commodity *j*, $T = \pi t[D_2(p) - X_2(p)] = \pi t M_2(p)$ is total tariff revenues, $S = \pi s X_2[\pi(1 + s)]$ measures total subsidy payments, $D_2(p)$ is total domestic demand, and $M_2(p)$ expresses import demand for good two at domestic price p. Using the share definitions, we express the *i*th person's real income under a tariff and subsidy regime respectively as:

$$R_t^i = [\phi_t^i(Y_t + T) - (\phi_t^i - \psi_t^i)T]/e(p) \tag{4}$$

$$R_s^i = [\phi_s^i(Y_s - S) + (\phi_s^i - \psi_s^i)S]/e(\pi). \tag{5}$$

Each person's real income is proportionate to real national income, R, after it has been adjusted by a term which reflects the divergence between factor income and tax shares, whereby real national income under tariff and subsidy respectively are:

$$R_t = (Y_t + T)/e(p) \qquad \text{and} \qquad R_s = (Y_s - S)/e(\pi).$$

We finally note that, at t = s of a small country, $Y_t = Y_s$, $\phi_t^i = \phi_s^i$, and $(Y_t + T) = (Y_s - S + \pi t D_2) = [Y_s - S]/[1 - m_2 t/(1 + t)]$, where $m_2(p) = pD_2/(Y_t + T)$ is the marginal and average propensity to consume the second good under a tariff.

III. THE DISTRIBUTION OF TAX REVENUES ARGUMENT

The purpose of this section is to show that in a small economy a person may be better off under a tariff than equal-value production subsidy if the person's shares of taxes paid and of tariff revenues received exceed the share of factor income.[5] In many less developed countries in which a large segment of below-average income people pays no or very little income tax, these conditions are likely to be encountered.

We assume that initially, when protection of the import industry is considered, free trade prevails. At issue is whether the *i*th person will fare

better with a tariff or an equal-value production subsidy; that is, whether R_t^i is greater or smaller than R_s^i, given that t = s. Using the earlier stated definitions of real national income, R_t and R_s, we subtract (5) from (4) and obtain:

$$(6) \qquad R_t^i - R_s^i = \phi^i[R_t - R_s] + [\psi^i - \phi^i][T/e(p) + S/e(\pi)],$$

where we set $\phi_t^i = \phi_s^i = \phi^i$ and for simplicity's sake assume that $\psi_t^i = \psi_s^i = \psi^i$.[6] The ith person's real income change from selecting a tariff rather than production subsidy depends on two effects. First, there is the real income change for the entire country weighted by the person's factor income share. Second, there is the real value of government savings, as it replaces an expenditure-causing subsidization policy by a revenue-generating tariff policy, when weighted by the difference between the person's tax and income shares. Clearly, the second effect is positive (negative) if the ith person's tax share is high (low) relative to his or her factor income share.

An interpretation of $(R_t - R_s)$ can be given for situations where policy changes are large. Recalling that $R_t = [Y_t + T]/e(p)$ and $R_s = [Y_s - S]/e(\pi)$, where $Y_t = Y_s$ for s = t, and writing $e(p) = e(\pi) + \Delta e$, we obtain:

$$(7) \qquad R_t - R_s = \{T + S - [Y_s - S][\Delta e/e(\pi)]\}/e(p) = [T + S - R_s \Delta e]/e(p),$$

where the change in price index, Δe, is due to a tariff which, starting from a free trade position, can be expressed as $(\Delta e/\Delta p)\pi t$. For large tariffs, the index change is approximated by:

$$(8) \qquad \Delta e/\Delta p \cong [e_p(\pi) + e_p(p)]/2,$$

where we average the price index responses in the neighborhood of initial and new consumption points respectively. Since $e_p(\pi) = D_2(\pi)/R_s$ and $e_p(p) = D_2(p)/R_t$, we can write:

$$(9) \qquad R_s \Delta e = \pi t\{D_2(\pi) + D_2(p) - [D_2(p)/R_t][R_t - R_s]\}/2.$$

Substitution of $(T + S) = \pi t D_2(p)$, when $t = s$, and of (9) in (7), and using $m_2 = [\pi(1 + t)D_2(p)]/[R_t e(p)]$, yields:

$$(10) \qquad R_t - R_s = \{\pi t[D_2(p) - D_2(\pi)]\}/\{2e(p)[1 - m_2 t/(2 + 2t)]\},$$

which is always negative since $D_2(p) < D_2(\pi)$ for $p > \pi$ and $1 > m_2 t/(2 + 2t)$. Consequently, no matter what the rate's value, protection of an industry through a tariff makes the nation as a whole always worse off than protection through an equal-rate production subsidy.

Knowing that $R_t < R_s$ always, we now return to (6) to draw the following conclusions concerning the *i*th person's welfare effects of a tariff relative to a production subsidy:

1. If the tax system is unbiased, in the sense that tax shares are the same as income shares, a production subsidy is preferred by every individual independent of factor ownership. This reaffirms the result that tariffs are dominated by subsidies.
2. If the tax system is biased such that some peoples' tax shares exceed their income shares, they may find tariffs to be superior to production subsidies as an instrument of protection. The superiority of tariffs is more likely the greater the difference between tax and income shares.

The *distribution of tax revenues argument* rests on the assumption that a country's tax system is such that high-income groups have tax shares which exceed their factor income shares. When high-income people consider protection, they realize that a tariff generates revenues whose distribution would be of primary benefit to them, while production subsidies require higher taxes which fall on them disproportionately. Looked at the two instrument's cost side, subsidization translates into higher income taxes for upper income groups, while tariff costs, in form of reduced consumer surplus, are distributed much more evenly across the population.[7] The argument, therefore, involves an asymmetry concerning the identity of cost bearers; subsidy costs fall on a small group of high income tax payers, while tariff costs are borne by all consumers of the import good.

IV. THE UNCERTAINTY ARGUMENT

This argument rests on the assumption that the voters' choice between employment of a tariff or subsidy regime has to be made before actual rates of protection are to be selected. For example, in a two-candidate race for political office, candidates may express positions only on the type of instrument but not on the rates to be chosen. What we are going to show is that under this uncertainty about future rates of protection *many* voters, especially those with moderate preferences for or against protection, may prefer a tariff to a subsidy regime. In presenting the argument, we assume that there is no bias in distributing tariff revenues or collecting taxes to finance the subsidy; that is, we assume that $\psi^i = \phi^i$.

The uncertainty argument rests on the assumption that the probability of

a given rate of protection getting adopted equals the fraction of people which considers this rate to be best.[8] The probability that rate of protection x will be adopted is expressed by $f(x,t)$ and $f(x,s)$ for the alternatives of tariff and subsidy regime respectively. If we define $R^i(x,t)$ and $R^i(x,s)$ as the ith person's welfare under tariff and subsidy regimes when rate x prevails, then the person's expected utility under a tariff regime is higher than under a subsidy regime if:

$$(11) \qquad B^i = \int_{\underline{x}}^{\bar{x}} R^i(x,\ t)dF(x,t) - \int_{\underline{x}}^{\bar{x}} R^i(x,s)dF(s,t) > 0,$$

where $F(x,.)$ is the cumulative distribution function under a given policy regime and $\bar{x}$ and $\underline{x}$ are the finite limits on the rates of protection under either policy regime. The values of $\bar{x}$ and $\underline{x}$ are given by the highest and lowest individually optimal rates of protection from all the people of the country.

To evaluate B^i, we first add and subtract $\int_{\underline{x}}^{\bar{x}} R^i(x,s)dF(x,t)$ to obtain:

$$(12) \qquad B^i = \int_{\underline{x}}^{\bar{x}} [R^i(x,\ t) - R^i(x,s)]dF(x,t) - \int_{\underline{x}}^{\bar{x}} R^i(x,\ s)[dF(x,s) - dF(x,t)].$$

The first term on the RHS of (12) must always be negative when $\psi^i = \phi^i$ since we know from (6) that $R^i(x,t) \leq R^i(x,s)$ for all x, with equality holding at $x = 0$ only. This term measures the expected loss in utility due to a switch from a subsidy to a tariff regime when the probabilities of tariff rates are employed as weights. Hence, a necessary condition for B^i to become positive is that the second term on the RHS of (12), including the minus sign, is positive.

Using integration by parts, this second term can be rewritten as:

$$(13)\qquad -\int_{\underline{x}}^{\bar{x}} R^{i}(x,s)[dF(x,s) - dF(x,t)] = \int_{\underline{x}}^{\bar{x}} R'^{i}(x,s)[F(x,s) - F(x,t)]dx,$$

where $R'^{i}(x,s)$ is the marginal utility of a subsidy change.[9] For a person whose utility maximizing rate is $\tilde{x}^{i}$, the term R'^{i} is positive for $\underline{x} < x < \tilde{x}^{i}$, whereas R'^{i} is negative for $\tilde{x}^{i} < x < \bar{x}$. What we are going to show is that the expression in (13) must always be positive for a voter whose optimal policy is free trade, as the distribution $F(x,t)$ dominates $F(x,s)$[10] in the first-order stochastic sense. For voters whose optimal rate of protection deviates from free trade the value of this expression becomes smaller with the degree of deviation.

First-order stochastic dominance of $F(x,t)$ over $F(x,s)$ is due to the fact that each person's optimal tariff rate, whether positive or negative, is always less extreme that the same person's optimal subsidy rate. In order to show this, we rewrite (4) and (5) under the assumption that $\phi^{i} = \psi^{i}$, as:

$$(4')\qquad R_t^i = \phi^i(Y_t + T)/e(p) = \phi^i\{X_1(p) + pX_2(p) + \pi t[D_2(p) - X_2(p)]\}/e(p)$$

$$(5')\qquad R_s^i = \phi^i(Y_s - S)/e(\pi) = \phi^i\{X_1(p) + pX_2(p) - \pi sX_2(p)\}/e(\pi),$$

where $p = \pi(1 + t) = \pi(1 + s)$. The responses of real income to tariff and subsidy rate changes are:

$$(14)\qquad \partial R_t^i/\partial t = \pi\phi^i\{\pi t(\partial M_2/\partial p) + [Y_t + T](\partial\phi^i/\partial p)/\phi^i\}/e(p)$$

$$(15)\qquad \partial R_s^i/\partial s = \pi\phi^i\{-\pi s(\partial X_2/\partial p) + [Y_s - S](\partial\phi^i/\partial p)/\phi^i\}/e(\pi),$$

where $M_2 = (D_2 - X_2)$ is import demand, $(\partial M_2/\partial p) < 0$, $(\partial X_2/\partial p) > 0$, and $(\partial \phi^i/\partial p)$ measures the change in the *i*th person's factor income share as the second good's domestic price rises. Both real income responses reveal that a person can gain from an increase in either tariff or subsidy rate only if his factor income share rises as the domestic price of the import good goes up. Figure 1 portrays the real income curves for two alternative persons, a winner from protection indicated by superscript w and a loser from protection with superscript *L*. The $R^i(t)$ curve is uniformly below the $R^i(s)$ curve except for the free trade point, where $s = t = 0$. Assuming that the second order conditions for a maximum are satisfied, the ith individual maximizes real income by choosing a subsidy rate $\tilde{s}^i$ such that:

$$\tilde{s}^i = [(Y_s - S)(\partial \phi^i/\partial p)]/[\pi \phi^i (\partial X_2/\partial p)]. \tag{16}$$

Clearly, the optimal subsidy rate is positive for a winner from protection, since $\partial \phi^W/\partial p > 0$, and negative for a loser, as $\partial \phi^L/\partial p < 0$. But what is the slope of the $R^i(t)$ locus at tariff rate $t = \tilde{s}^i$? If one can show that it is negative at $\tilde{s}^W$, then the individually optimal tariff rate $\tilde{t}^W$ occurs at a lower value than $\tilde{s}^W$, as drawn in the diagram for the winner. And if the slope of $R^L(t)$ is positive at $\tilde{s}^L$ then $\tilde{s}^L < \tilde{t}^L < 0$. In demonstrating this we note again that, at a given rate x, $Y_s = Y_t$ and $(\partial X_2/\partial p)$ is the same under both regimes. Then, we recall that $(Y_t + T) = (Y_s - S)/[1 - m_2 t/(1 + t)]$. Substituting (16) for t and the expression for $(Y_t + T)$ in (14), one can see after some manipulations that:

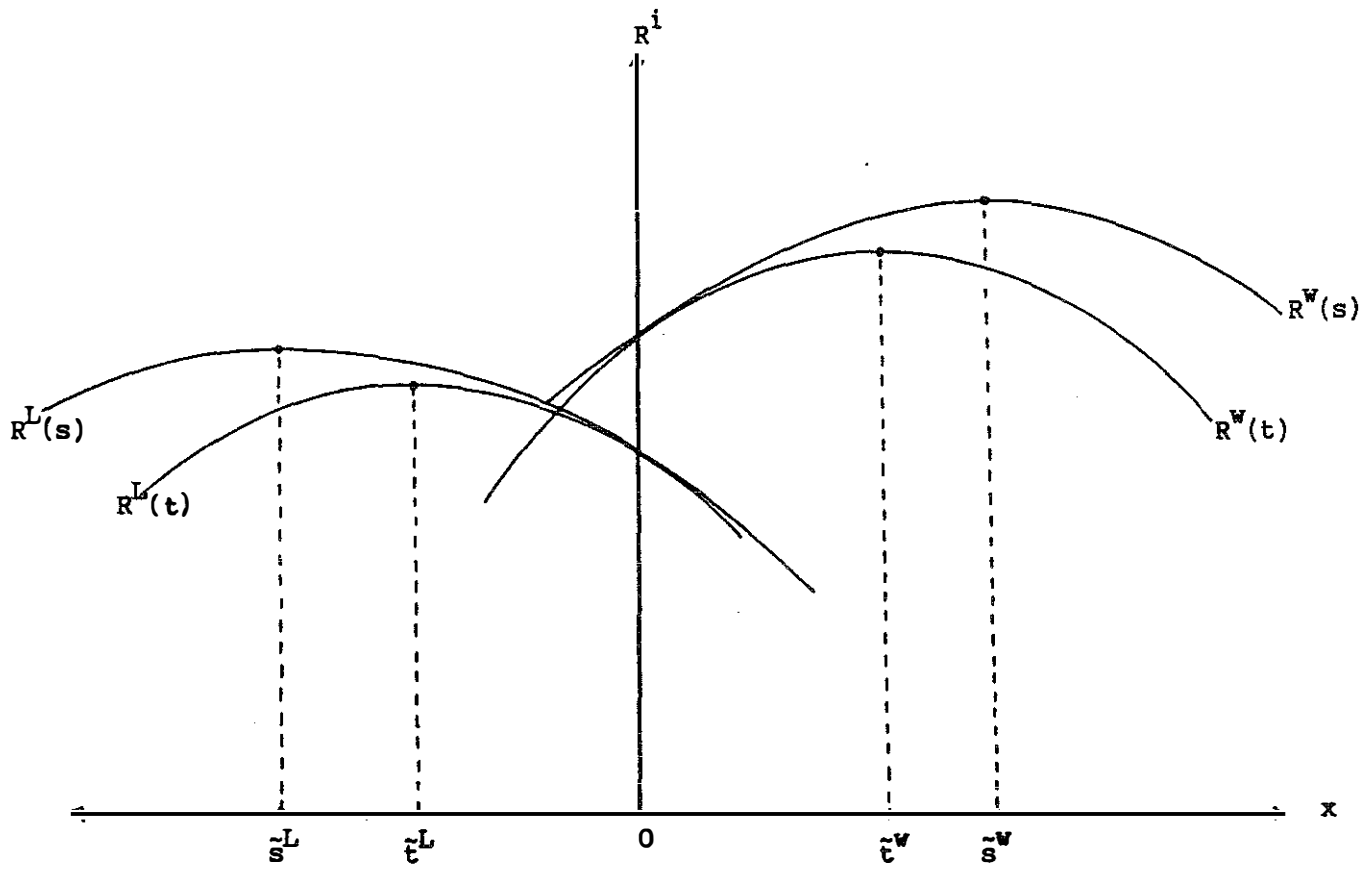

FIGURE 1

$$(17) \qquad \partial R^i/\partial t = \frac{\{\pi[Y_s - S][\partial \phi^i/\partial p]\}\{(\partial D_2/\partial p)|_U/(\partial X_2/\partial p)\}}{e(p)[1 - m_2 t/(1 + t)]},$$

where $(\partial D_2/\partial p)|_U < 0$ is the pure substitution effect of the own price change.[11] This implies that, evaluated at $t = \tilde{s}^i$, $\partial R^i_t/\partial t < 0$ if $\partial \phi^i/\partial p > 0$ and $\partial R^i_t/\partial t > 0$ if $\partial \phi^i/\partial p < 0$. In words, for people who gain (lose) from protection, real income under the tariff regime is already (still) decreasing (increasing) at the rate where the optimal production subsidy is attained. This means that the optimal import tariff rate is lower than the optimal production subsidy rate for gainers from protection, while the optimal import subsidy (implying a negative value for t) falls short of the optimal production tax for losers from protection; that is, $\tilde{s}^i < \tilde{t}^i < 0$ for all people with $\tilde{x}^i < 0$ and $0 < \tilde{t}^i < \tilde{s}^i$ for all people with $\tilde{x}^i > 0$.

The fact that the range of individually optimal tariff rates around the free trade point is narrower than the range of subsidy rates furthermore implies that:

$$(18) \qquad \begin{aligned} &[F(x,s) - F(x,t)] > 0 \text{ for } x < 0 \\ &[F(x,s) - F(x,t)] < 0 \text{ for } x > 0, \end{aligned}$$

given our assumption that the probability of a certain rate of protection being adopted equals the fraction of the population which considers this rate to be optimal. As we examine the case of a person whose optimal policies favor free trade, $\tilde{x}^i = 0$, such that $R'^i > 0$ for $x < 0$ and $R'^i < 0$ for $x > 0$, one can see from (18) that

$$(19) \qquad R'^i(x,s)[F(x,s) - F(x,t)] > 0$$

always. Hence, the expression of (13) is positive and the second term in (12), which states the expected utility gain from a subsidy to tariff switch, is positive. Provided the second terms' magnitude is sufficient to outweigh the negative first term in the B^i expression, the person will favor a tariff regime.

The case for preferring a tariff regime under uncertainty is weakened when the person's optimal subsidy rate under certainty is not zero. For example, let us consider the case when $\tilde{x}^i = \tilde{s}^i > 0$. Then one can rewrite (13) as:

$$(13') \qquad \int_{\underline{x}}^{0} R'^i[F(x,s) - F(x,t)]dx + \int_{0}^{\tilde{x}^i} R'^i[F(x,s) - F(x,t)]dx + \int_{\tilde{x}^i}^{\bar{x}} R'^i[F(x,s) - F(x,t)]dx ,$$

where $R'^i > 0$ for $x < \tilde{x}^i$ and $R'^i < 0$ for $x > \tilde{x}^i > 0$. Using (18), one can see that the first and last terms in (13') are still positive while the second term becomes negative. The more extreme the optimal subsidy for the individual under consideration, the larger is the impact of this middle relative to the last term and the less likely it is that the person prefers a tariff regime.

Figure 2 provides a simple illustration of the possibility that a person prefers a tariff to a subsidy regime when rates of protection are not known yet. It is assumed that individual *i* believes that actual trade policy is going to be dictated either by those who strongly favor protection of the second industry, with $\bar{t}$ and $\bar{s}$ as their optimal respective rates, or by those who strongly favor assistance to the first industry, implying $\underline{t}$ and $\underline{s}$ as their

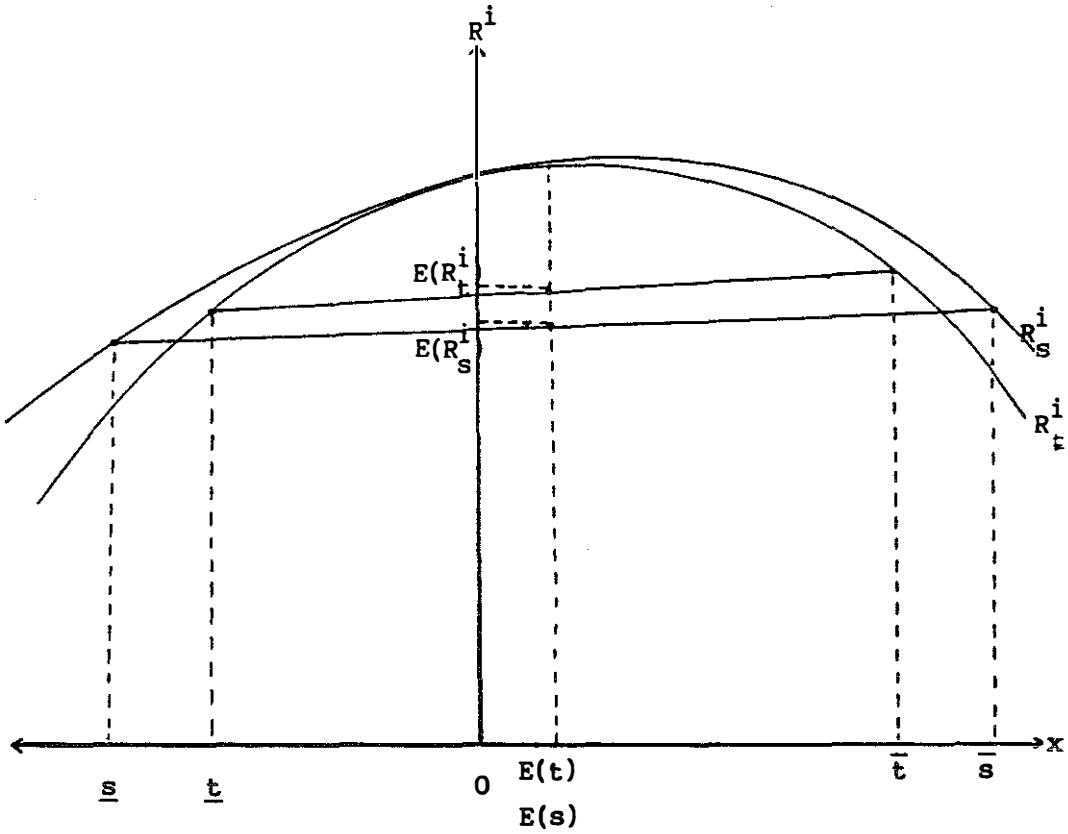
R^i
$E(R^i_t)$
$E(R^i_s)$
R^i_s
R^i_t
x
$\underline{s}$
$\underline{t}$
0
E(t)
E(s)
$\bar{t}$
$\bar{s}$

FIGURE 2.

choices. Assuming subjective probabilities of 1/2 for each possible outcome, the ith person's real income at the expected subsidy rate E(s) exceeds real income at the expected tariff rate E(t). However, expected real income under the tariff regime, $E(R_t^i)$, is larger than expected real income under the subsidy regime, $E(R_s^i)$, making individual *i* prefer the tariff regime.

V. THE LARGE COUNTRY ARGUMENT

The earlier made assertion that, at each rate of protection and for each individual, a production subsidy leads to a higher level of welfare than a tariff applies only to the case when world prices are fixed. The purpose of this section is to show that, with variable world prices, all people whose factor income shares shrink with import protection prefer a tariff to a subsidy. Even people whose income shares rise in response to protective action may prefer tariffs to subsidies.

Under variable world prices, equal-valued tariffs and subsidies no longer result in the same domestic prices as faced by producers. The decrease in world excess demand for the second good is larger when a tariff is imposed than when an equal-value subsidy is granted, as can be seen from differentiation of the import functions, $M_2(s)$ and $M_2(t)$, under subsidy and tariff respectively, where:

$$M_2(s) = D_2[\pi,\ X_1(p) + pX_2(p) - \pi s X_2(p)] - X_2(p)$$

(20)

$$M_2(t) = D_2\{p,\ X_1(p) + pX_2(p) + \pi t[D_2(p) - X_2(p)]\} - X_2(p).$$

These differentiations, assuming that initially s = t = 0, yield:

$$(21) \quad \partial M_2/\partial s = -\pi \partial X_2/\partial p < 0 \quad \text{and} \quad \partial M_2/\partial t = \pi[(\partial D_2/\partial p)|_U - (\partial X_2/\partial p)] < 0.$$

The import response expression tell us that, evaluated at the initial world price, the decline in world excess demand for the import good is greater in case of a tariff than a subsidy. Consequently, world and domestic prices of the import good will be lower under a tariff than an equal-value subsidy; that is:

$$(22) \quad \pi(s) > \pi(t) \quad \text{and} \quad p(s) > p(t) \quad \text{for } s = t.$$

A second consideration under variable world prices is that each person's optimal instrument use involves now a combination of a tariff and production subsidy rather than use of only one instrument. Independent of factor ownership, all people are in full agreement that the same tariff rate, namely the one which maximizes social welfare for a large country, should be employed. On the other hand, the accompanying optimal subsidy depends on relative factor ownership.[12]

In a situation of instrument choice, a person is not given the option of combining the two instruments. Each individual has to express a preference for either tariffs or subsidies. It is obvious that neither instrument is preferred at all rates and by all people to the other instrument. Some may like tariffs better while others prefer production subsidies. Broadly speaking, however, there exists a bias towards tariffs, as all people whose income shares decline with import protection are better off with a tariff for a large range of protection rates, and even some people whose income shares

expand in response to protection are better served by a tariff.

To show this, we express the ith individual's real income under instrument use $k = t,s$ as:

$$R_k^i = \phi_k^i R_k, \tag{23}$$

where it is assumed that $\psi^i = \phi^i$. Instrument use affects both income share, ϕ_k^i, and real national income, R_k. The latter is maximized when the chosen instrument is a tariff and the rate which is optimal for the whole country, $\tilde{t} = 1/(\varepsilon^* - 1)$, is employed, where ε^* is the import elasticity of demand for the foreign country. Furthermore, one can show that real national income under the tariff regime, R_t, is larger than real national income under the subsidy regime, R_s, for a wide range of rates of protection.[13]

The relationship between a person's income share under a tariff and equal-value subsidy, on the other hand, depends on whether the person is a gainer or loser from protection. We first look at people whose income shares are reduced by import protection. As they consider the choice between tariffs and subsidies, tariffs result in smaller losses in income shares, since $p(t) < p(s)$ implies that $(\partial\phi_s^i/\partial p)(\partial p/\partial s) < (\partial\phi_t^i/\partial p)(\partial p/\partial t) < 0$ for all $s = t > 0$. For individuals whose income shares rise with the adoption of protective measures, on the other hand, the gains in income shares are more pronounced in the case of a production subsidy since $(\partial\phi^i/\partial p)(\partial p/\partial s) > (\partial\phi^i/\partial p)/(\partial p/\partial t) > 0$.

Returning to (23), we now examine which instrument is preferred by a given person. If the person's income share is reduced by import protection then, except for some very high rates, $R_t > R_s$ and $\phi_t > \phi_s$ for $t = s > 0$. Consequently, 'losers' from protection are better off with the tariff than the subsidy. If, the person's income share rises with import protection then,

except for very high rates, $R_t > R_s$ but $\phi_t < \phi_s$ for $t = s > 0$. Hence, 'gainers' from protection are better off with a tariff only if the tariff advantage in raising national income is not offset by the tariff disadvantage in raising one's income share. This is more likely to be the case for small rather than large gainers from protection.

VI. SOME THOUGHTS ON THE TRANSPARENCY ARGUMENT

Incomplete information is at the core of the *transparency argument*. The argument states that the public can more easily be persuaded to accept a tariff than production subsidy since the detrimental ramifications of the latter are more transparent. The reason for this asymmetry in transparency is, however, not easy to pinpoint. Intuitively, one can argue that tariffs work in a more complicated way than subsidies. In particular, the former require an assessment of how much consumer surplus a person loses while the latter deals with the simpler task of figuring out how much more taxes have to be paid to finance the subsidy. Not only understand people the impact of subsidies better than of tariffs, but they will receive clearer messages from news services and politicians about the costs of these instrument uses.[14]

Let us examine the essence of the transparency argument with more rigor. We return to the earlier made assumption of a small country and employ (4)-(5) to express the *i*th person's real income under tariff and subsidy respectively, assuming that factor income and tax shares are identical; that is, $R_t^i = \phi_t^i(Y_t + T)/e(p)$ and $R_s^i = \phi_s^i(Y_s - S)/e(\pi)$. Now let us assume that the *i*th person is not sure how, starting from an initial free trade position, the tariff would affect his price index e(p). On the other hand, there would be no change in

$e(\pi)$ under a subsidy. This uncertainty under the tariff has the following implications for the choice of instruments. As Figure 3 illustrates, R^i is convex in the price index, whereby R^i_t lies uniformly above R^i_s since $(Y_t + T) > (Y_s - S)$ and both disposable incomes are evaluated at the same level of *e*. For a subsidy, real income at $e(\pi)$ would be $R^i_s[e(\pi)]$ which is larger than real income with an equal value tariff which amounts to $R^i_t[e(p)]$. When $e(p)$ is random, however, then it is possible that $E\{R^i_t[e(p)]\} > R^i_s[e(\pi)]$ since, using Jensen's inequality, $E[1/e(p)] > 1/E[e(p)]$. In the diagram this is illustrated for the case where the person attaches probabilities of 1/2 to the possible price indices of e_1 and e_2. The person would prefer a tariff with its unclear effect on consumer surplus over a subsidy with its much more transparent cost.

Unfortunately, the above presented reasoning is flawed. The assumption that people have difficulty in evaluating the price index under the new tariff rate must rest on the premise that people do not know with certainty what their consumption demand would be at the tariff-ridden domestic price. As Drèze (1974), however, points out in his discussion of the foundations of expected utility theory, "uncertainty of the decision-maker about his own tastes at a future date cannot be described through distinct events corresponding to distinct preference structures, since this would violate the condition of interpersonal objectivity."

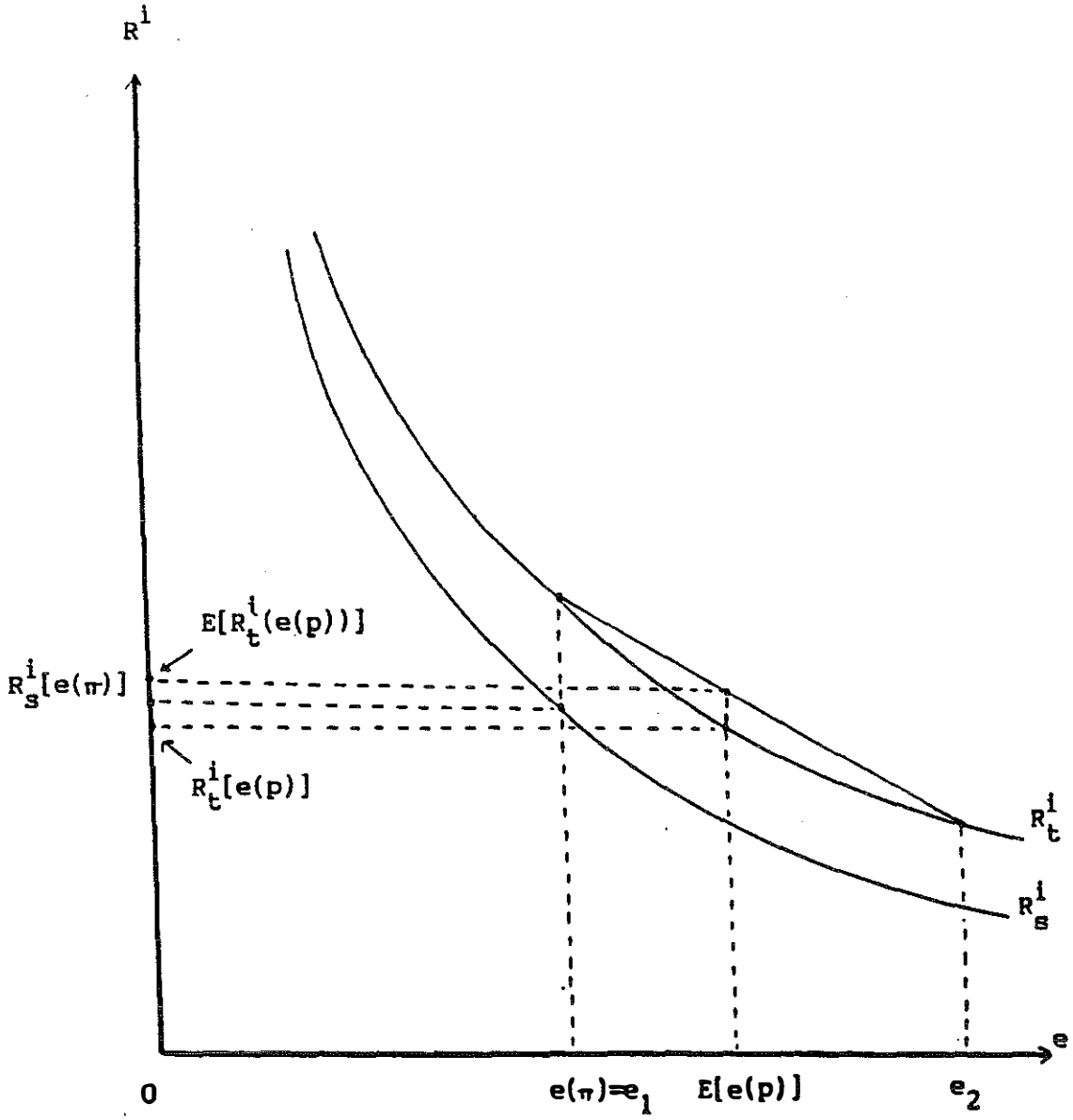

FIGURE 3

VII. CONCLUDING REMARKS

The starting point for this paper was the observation that, with factor ownership the only distinguishing characteristic, tariffs are dominated by production subsidies from an individual's point of view. We added to the growing list of arguments in support of individual preferences for tariffs by allowing for biased income tax systems, by introducing uncertainty about what rates will actually come about, and by doing away with the small country assumption when choice is restricted to one instrument. The objective of the paper was to show that under each of these modifications individuals may indeed express a preference for tariffs. We have talked about individual preferences only and do not want to leave the impression that a given argument automatically explains the social choice of tariffs. One has to add a complete specification of the political process to explain the social choice. However, one could show that for appropriate choices of voter eligibility rules, majority voting can bring about a tariff regime as the social choice under each of the three arguments presented.

FOOTNOTES

[1] Other, potentially more efficient, instruments, such as lump-sum transfers and factor income taxes are precluded by assumption.

[2] This proposition at the individual's level corresponds to the more basic proposition at society's level that subsidies are better than tariffs in correcting domestic distortions, as demonstrated by Bhagwati and Ramaswami (1963) and Bhagwati (1971).

[3] Hillman (1989) discusses the essence of the argument and refers to its role in the history of Australian tariff formation.

[4] This breakdown of subsidy domination at the level of individual voters is similar to the breakdown of the first-best production subsidy argument at the level of a benevolent government, when there are not just production distortions but also government revenue constraints (Corden, 1986, pp. 96 - 101), uncertainty (Eaton and Grossman, 1985), revenue-seeking by individuals or groups (Bhagwati, Brecher, and Srinivasan, 1984), or non-economic objectives (Johnson, 1965 and Bhagwati and Srinivasan, 1969).

[5] It is explicitly assumed that the choice between tariffs and subsidies is made given the existing income tax system. The model does not explain how the income tax structure has come about and how preferences various taxes would be determined if the entire tax structure were to be determined.

[6] This simplification does not affect the argument in any fundamental way.

[7] In reality it may not be the case that consumer surplus shrinks in proportion to a person's income, as preferences may not be identical and homothetic. In less developed countries, the share of income spent on imported goods frequently is larger for upper-income than lower-income groups. In such a case, the distribution of tax revenues argument would be weakened.

[8] Nothing is said about the political process itself through which the rate is chosen, as even this process may not be known yet. Loosely speaking, the assumption states that a person considers a certain rate of protection more likely the more people look at it as their best rate.

[9] Note that $F(\underline{x},t) = F(\underline{x},s) = 0$ and $F(\bar{x},t) = F(\bar{x},s) = 1$.

[10] See Laffont (1989) for definitions of stochastic dominance.

[11] In deriving this expression we made use of $\partial M_2/\partial p = \partial D_2/\partial p - \partial X_2/\partial p = [(\partial D_2/\partial p)|_U - (\partial X_2/\partial p)]/[1 - m_2 t/(1 + t)]$.

[12] For more details see Mayer and Riezman (1987) and references therein.

[13] As long as the rate of protection is less than the socially optimal tariff rate, real national income under a tariff is at least as large as under a production subsidy. This can be seen by adding a consumption tax to a preexisting production subsidy and evaluating the overall welfare change. For very high rates of protection beyond the socially optimal tariff rate, however, it is possible that real national income under the subsidy is higher than under the tariff.

[14] The real complicated question, namely how a given rate of protection affects the factor income of individuals under different protection instruments, does not enter the comparison since in a small country a person's factor income, whatever its value, would be the same under both tariff and subsidy of the same value.

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